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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/075,666	05/11/1998	TETSUJIRO KONDO	450100-2780.	3934

20999 7590 07/16/2004
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EXAMINER

CHANG, JON CARLTON

ART UNIT	PAPER NUMBER
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2623

DATE MAILED: 07/16/2004

24

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/075,666

Applicant(s)

KONDO, TETSUJIRO

Examiner

Jon Chang

Art Unit

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-14 is/are allowed.
- 6) ☒ Claim(s) 15-38 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 08/061730.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

Response to Applicant's Amendment and Arguments

1. The amendment filed March 5, 2004, has been entered and made of record.

Applicant has removed the unsupported language (see Office Action mailed December 5, 2003) of "said second digital image signal being independent from said first digital image signal and being generated other than by interpolation thereof", and similar language, from claims 15, 19, 23, 27, 30, 33 and 36. Therefore, the rejections under 35 U.S.C. § 112, first paragraph, based on that unsupported language, are withdrawn.

Applicant's arguments have been fully considered but they are not deemed to be persuasive for at least the following reasons.

Applicant currently argues that Kanno does not teach obtaining class data by learning from a high quality image. First, "quality" is not being claimed in all of the claims. It is only being claimed in claims 15 and 23 (and their respective dependent claims). Second, the term "quality" has no support in the original disclosure. The Examiner has reviewed the entire disclosure, and is unable to find this term. Third, assuming Applicant intention was the term "definition" or "resolution", this argument has been previously presented. In the amendment filed July 18, 2002, Applicant presented the argument that Kanno did not teach "class data by learning." The Examiner rebutted this argument (paper no.16, mailed November 4, 2002). In the response filed February 3, 2003, Applicant also argued that Kanno's training digital image was not of high resolution. The Examiner rebutted this argument as well (paper no.18, mailed February 15, 2003). In an apparent acquiescence to the Examiner's position, Applicant

subsequently filed the amendment of July 17, 2004 adding the unsupported language discussed in the last Office Action (paper no.22, mailed December 5, 2003), in order to avoid the rejections relying on Kanno. Applicant now has removed the unsupported language, and has revisited the previously presented arguments.

It was and still is the Examiner's position that Kanno teaches obtaining class data by learning from a high resolution image. Kanno teaches "use of a learning high density image" (column 1, lines 40-41). Therefore, the learning image is a high resolution image. Kanno further teaches obtaining class data by learning from that high resolution image. In column 4, starting at line 42, Kanno describes the learning process. The class data is stored (note Fig.11, items 23 and 9). Class data is designated by r1-r16, which are also reference pixels used to reference an address (e.g., column 4, lines 62-63 and column 10, lines 51-52). In Kanno, the addresses in turn, reference locations in storage for the patterns obtained through learning (column 5, lines 1-25). Not only does this meet the language of the claims, this is also in total agreement with Applicant's disclosure. For example, pointing to Applicant's patent, column 4, lines 19-21 reads, "Sample values of picture elements a, b, c, d, and x are written into data memory 23 with respect to **addresses which are class information.**" (emphasis added).

Claim Rejections - 35 USC § 112

2. Claims 15-18 and 23-26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably

convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 15 recites, "a second digital image signal having a quality higher than that of the first digital image signal," and "a training digital image signal having a quality higher than that of the first digital image signal." These features are not supported by the original disclosure. If Applicant disagrees, he is respectfully requested to point to the exact location in the disclosure where this feature may be found.

Claim 23 recites, "a first quality of said digital video signal admitting of said first standard being lower than a second quality of said digital video signal admitting of said second standard," and "video signal admitting of said second standard having said second quality." These features are not supported by the original disclosure. If Applicant disagrees, he is respectfully requested to point to the exact location in the disclosure where this feature may be found.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 15, 17, 19, 21, 22, 33, 35-36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanno et al. (US 5,229,868) in view of Matsumura (US 5,148,499).

As to claims 15 (claim 15 utilizes the term "quality". As this term does not have support in the disclosure, the Examiner interprets "quality" to mean "resolution" for purposes of this rejection.) and 33, Kanno discloses a digital signal conversion apparatus (figures 1 and 4) which includes:

- a memory for storing class data for respective classes at addresses corresponding to said respective classes (figure 11, items 3 and 9; addresses in the memory are inherent), said class data obtained by learning associated with at least a training digital image signal (figure 11, item 2; column 10, lines 17-23). The training image signal has a high resolution component and has a resolution higher than that of the first digital image (see column 1, lines 35-45; while the first digital image is of low resolution);

- means for receiving first digital image signal including pixel data representing pixel values (figure 11, item 4);

- means for clustering (figure 12, item 19 clusters input signal into a class designated by r1-r16) pixel data in accordance with adjacent pixel data of the second digital image signal (e.g., r6 and r7 are adjacent to h1) to produce a class;

- means for retrieving class data from one of the addresses of the memory corresponding to the class of the first digital image signal (the class r1-r16 is used to address the memory to retrieve the class data h1-h3; figure 3); and

-means for generating pixel data representing pixel values of the second digital image signal based upon at least the retrieved class data (figures 1 or 11, item 7). See column 4, lines 32-41.

With regard to "generating all pixel data," Kanno generates all data since the interpolation circuit, as shown for example in Fig.4 does "generate" all of the pixel data representing pixel values of the second digital image by producing (i.e., generating) the pixel data at the terminal 15. Kanno does not explicitly teach generating all of pixel data "in the same manner in accordance with a common algorithm" as claimed. However, this is extremely old and well known in the art. For example, Matsumura teaches this (see for example, Fig.2B, and column 4, lines 27-32). As explained in Matsumura, the technique provides the advantage of preventing image deterioration (e.g., column 2, lines 51-57). Therefore, it would have been obvious to one of ordinary skill in the art to modify Kanno according to Matsumura in order to obtain this advantage.

Claims 19 and 36 recite a method which generally corresponds to the apparatus of claims 15 and 19 and are rejected on the same grounds.

As to claims 22, 35 and 38, Kanno teaches that the class data stored in memory corresponds to pixel data representing the second standard (i.e., higher resolution; see figure 2, h1-h3) and the means for generating generates pixel data representing the second image signal by providing the retrieved class data as pixel data representing pixel values. See column 4, lines 38-41.

With regard to claims 17 and 21, Kanno does not teach the use of an orthogonal decoding to provide the input digital signal. Kanno does teach that the image

processing system is intended to be used with facsimile communication (column 1, lines 1-25). It is common in the art to transmit facsimile digital signals using orthogonal coding (the Examiner takes official notice of this fact). It would have been obvious to one of ordinary skill in the art, to include an orthogonal decoder in the image input device because Kanno et al. teaches that the system is to be used in the facsimile environment which commonly includes such encoding of digital signals.

5. Claims 18, 23, 25, 26, 27, 30, 32, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanno et al. (US 5,229,868) and Matsumura (US 5,148,499), and further in view of Collins (US 4,587,556).

To the extent that these claims mirror the language of claims 15, 19, 33 and 36 above, Kanno applies as already discussed above.

As to claims 23 (claim 23 utilizes the term "quality". As this term does not have support in the disclosure, the Examiner interprets "quality" to mean "resolution" for purposes of this rejection.), 27 and 30, Kanno does not specifically deal with standard and high definition *video* signals. However, conversion from a standard (i.e., lower) definition video signal standard (i.e., NTSC at 525 lines/field) to a higher definition video signal standard (i.e., PAL at 625 lines/field) is well known in the art. Collins, for example, discloses a system and method for performing this function. See figures 2, 4 and 5 as well as the Abstract and column 5, lines 19-27. Given the fact that using interpolation to convert between video signals is well known, it would have been obvious to one of ordinary skill in the art to utilize the specific interpolation processes

taught by Kanno for converting *video* signals in order to obtain the image quality advantages that reference teaches (by using learning image data, etc.) when converting a video signal. Note additionally that, although Kanno does not discuss video signals, the possibility of interpolating video data in the same way is not excluded since the mechanics of interpolating a single still-frame image such as in Kanno would not, in principle, be different from interpolating a single frame of a continuous stream of video data.

As to claim 25, Kanno teaches that the class data stored in memory corresponds to pixel data representing the second standard (i.e., higher resolution; see figure 2, h1-h3) and the means for generating generates pixel data representing the second image signal by providing the retrieved class data as pixel data representing pixel values. See column 4, lines 38-41.

Claims 18, and 32 recite generally similar limitations and are rejected on the same ground as applied to claim 25 above.

As to claim 26, Kanno teaches means for generating the class data (column 5, lines 9-19).

6. Claims 16, 20, 34 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanno et al. (US 5,229,868) and Matsumura (US 5,148,499), and further in view of Tararine et al. (US 5,048,102).

As applied to claims 15, 19, 33 and 36 above, Kanno does not teach that the class data is coefficient data and the means for generating the second image data

operates in accordance with the coefficient data. Kanno teaches data conversion using stored interpolated values which have already been computed. Tararine et al. teaches that these two methods are equivalents in the art (column 7, line 15 through column 8, line 7). It would have been obvious to one of ordinary skill in the art to replace the direct accessing of the interpolation data taught by Kanno et al. with a method that computes the interpolation data from weights or coefficients. Because Tararine et al teaches that these methods are equivalents, use of one or the other would have been an obvious and routine substitution dictated by constraints or requirements of a particular designer.

7. Claims 24, 28, 29, 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanno et al. (US 5,229,868), Matsumura (US 5,148,499) and Collins (US 4,587,556) as applied to claim 23 above, and further in view of Tararine et al. (US 5,048,102).

Kanno does not teach that the class data is coefficient data and the means for generating the second image data operates in accordance with the coefficient data. Kanno teaches data conversion using stored interpolated values which have already been computed. Tararine et al. teaches that these two methods are equivalents in the art (column 7, line 15 through column 8, line 7). It would have been obvious to one of ordinary skill in the art to replace the direct accessing of the interpolation data taught by Kanno et al. with a method that computes the interpolation data from weights or coefficients. Because Tararine et al teaches that these methods are equivalents, use

of one or the other would have been an obvious and routine substitution dictated by constraints or requirements of a particular designer.

Claim 29 recites generally similar limitations and are rejected on the same ground as applied to claim 25 above.

Allowable Subject Matter

8. Claims 1-14 are allowable over the prior art of record.

Reasons for indicating allowable subject matter were given in a previous office action, paper no. 4, and incorporated herein by reference.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of


the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jon Chang whose telephone number is (703)305-8439. The examiner can normally be reached on M-F 8:00 a.m.-6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703)308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jon Chang
Primary Examiner
Art Unit 2623

Jon Chang
July 14, 2004